

COMPOSITIONS AND METHODS FOR THE MODULATION OF GENE EXPRESSION IN PLANTS

ABSTRACT

Compositions and methods for modulating nucleotide sequence expression,
5 particularly for modulating gene expression in plants, are provided. The compositions
comprise precursor RNA constructs for the expression of an RNA precursor. The
precursor RNA construct comprises a promoter that is expressed in a plant cell driving
the expression of a precursor RNA having a microRNA. The miRNA is complementary
or partially complementary to a portion of a target gene or nucleotide sequence and
10 function to modulate expression of the target sequence or gene. In this manner, the RNA
precursor construct can be designed to modulate expression of any nucleotide sequence
of interest, either an endogenous plant gene or alternatively a transgene. The precursor
RNA constructs may be used in combination with modulators to enhance the effect on
gene expression. Expression of a modulator in the presence of the precursor RNA alters
15 the accumulation of miRNAs and thus enhances the regulatory capabilities of miRNAs.
The invention further comprises the use of a modulator to control gene expression via
both the siRNA and the miRNA pathway. Transformed plants, tissues, cells and seeds
are also provided.